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Transmitted herewith for filing is the patent application of

Inventor(s): **Geoffrey M. Miller**

For : **COMPUTER-BASED SYSTEM FOR AUTOMATING ADMINISTRATIVE PROCEDURES IN A MEDICAL OFFICE**

Enclosed are:

1. **18** sheets of specification, **6** sheets of claims, and **1** sheet of abstract;
2. **6** sheet(s) of drawings;
3. Executed Declaration/Power of Attorney;
4. Executed Assignment Document and Recordation Cover Sheet;
5. Information Disclosure Statement and Form PTO-1449; and
6. Verified Statement Claiming Small Entity Status.

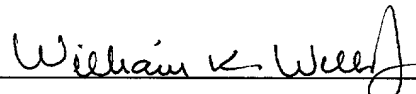
The filing fee has been calculated as shown below:

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BASIC FEE			760.00	760.00
TOTAL CLAIMS	29 - 20 =	9	18.00	162.00
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MULTIPLE DEPENDENT CLAIM PRESENT			260.00	0.00
*Number extra must be zero or larger			TOTAL	1000.00
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7. The Office is authorized to charge the filing fee of \$500.00 to Deposit Account No. 11-0600. The Office is further authorized to charge any additional fees or credit any overpayments to the above deposit account number. A copy of this letter is being submitted to facilitate processing of this application.

Dated: January 8, 1999

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<b>VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS</b> (37 CFR 1.9(d) & 1.27(c)) - SMALL BUSINESS CONCERN		<b>Docket No. (Optional)</b> 10259/1
Applicant or Patentee:	Geoffrey M. Miller	
Serial or Patent No.:	Not assigned	
Filed or Issued:	Herewith	
Title:	<b>COMPUTER-BASED SYSTEM FOR AUTOMATING ADMINISTRATIVE PROCEDURES IN A MEDICAL OFFICE</b>	
I hereby declare that I am		
<input type="checkbox"/> the owner of the small business concern identified below; <input checked="" type="checkbox"/> an official of the small business concern empowered to act on behalf of the concern identified below:		
NAME OF SMALL BUSINESS CONCERN	MILLERMED SOFTWARE, INC.	
ADDRESS OF SMALL BUSINESS CONCERN	1332 Parkview Avenue, Suite 200 Manhattan Beach, CA 90266	
<p>I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 37 CFR 1.21, 1.22, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.</p>		
<p>I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:</p> <p> <input checked="" type="checkbox"/> the specification filed herewith with title as listed above.  <input type="checkbox"/> the application identified above  <input type="checkbox"/> the patent identified above.         </p>		
<p>If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate verified statements averring to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).</p>		
<p>Each person, concern or organization having any rights in the invention is listed below:</p> <p> <input checked="" type="checkbox"/> no such person, concern, or organization exists.  <input type="checkbox"/> each such person, concern or organization is listed below         </p>		
<p>Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)</p>		
<p>I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(f))</p>		
<p>I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed. <i>Geoffrey M. Miller</i></p>		
NAME OF PERSON SIGNING	<i>Geoffrey M. Miller</i>	
TITLE OF PERSON IF OTHER THAN OWNER		
ADDRESS OF PERSON SIGNING	1332 PARKVIEW AV #200 MANHATTAN BEACH, CA 90266	
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**ASSISTANT COMMISSIONER FOR PATENTS**  
**Washington, D.C. 20231**

**TITLE OF INVENTION:**

**Computer-Based System for Automating Administrative  
Procedures in a Medical Office**

**INVENTOR:**

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**COMPUTER-BASED SYSTEM FOR AUTOMATING ADMINISTRATIVE  
PROCEDURES IN A MEDICAL OFFICE**

**Background of the Invention**

5           The present invention is directed generally to the field of office automation, and in particular to a computer-based system for automating administrative procedures in a medical office. In accordance with particular embodiments of the invention disclosed herein, various administrative procedures that would otherwise require substantial manpower to complete are instead performed by an integrated  
10 computer system that performs those administrative procedures in an efficient, cost-effective manner. As a result, substantially less manpower is required to run a medical office, thereby reducing overhead costs.

          It is well-recognized that the single largest expense in a medical office is personnel, and that the processing of documents generates the majority of the labor  
15 in a medical office. As service providers, however, physicians and medical office staff should ideally be spending their time on patient care, and not on document management. Time lost to administrative duties is all the more critical in view of the trend towards managed health care, leading to reduced medical fees but increased overhead costs.

20           There are literally hundreds of medical software applications available today. The majority of these applications deal with billing, scheduling, medical records, and most recently, outcome management. In addition, there are report generators, online services, and efforts to move towards a so-called "paperless office." While such tools can be helpful, none of them directly address the most costly component of  
25 medical office overhead -- labor hours.

          There is therefore a need to reduce the manpower required to complete office administration tasks typically required in a medical office, such as tape transcription, chart preparation, report generation, and forms generation. Embodiments of the present invention meet that need.

**Summary of the Invention**

The present invention is directed to a computer-based system for automating administrative procedures in a medical office. In accordance with a first embodiment of the present invention, such a system includes a control module in communication  
5 with an administrator module and a tape management module, as well as a database accessible by the administrator module and the tape management module. The tape management module can advantageously be configured, for example, to manage outsourcing of tape transcription. In a variation on this embodiment, a provider module is configured, for example, to generate reports directed to the needs of  
10 service providers (e.g., daily task lists, workload reports, chart locations, tape transcription status, record review status, etc.) as opposed to administrative staff, thus enabling the system to be geared towards the providers themselves in a way not typically found in existing medical office software.

In accordance with another embodiment of the present invention, a computer-  
15 implemented method for automating administrative procedures in a medical office is provided. Such a method includes the steps of maintaining a database including provider information, patient information, and document management information; using the database to automatically generate management reports identifying tasks to be performed on a given day; automatically generating reports associated with the  
20 tasks to be performed, populating the reports with information from the database as appropriate; and supporting off-site performance of one or more administrative tasks, including managing electronic information exchanges with off-site service providers.

In accordance with another embodiment, a computer-implemented subscription service for automating administrative procedures in a medical office is  
25 provided. In providing such a subscription service, one or more medical offices are provided with an office automation system including a communications interface for receiving data electronically. A service center receives a request for office administration services from such a medical office, processes the request, and electronically transmits information relating to the processed request to the office

automation system at the requesting medical office. Services that can be provided in this manner include, for example, tape transcription, chart preparation, record review, report generation, and forms generation.

These and other embodiments are described in detail below. Persons in the  
5 field of medical services will appreciate that embodiments of the present invention enable providers of medical services to streamline administrative operations in a way not possible with prior medical software applications, allowing for significant reductions in overhead attributable to administrative staffing requirements.

10 **Brief Description of the Drawings**

**Fig. 1** is a block diagram illustrating a computer-based system for automating administrative procedures in a medical office in accordance with an embodiment of the present invention.

**Fig. 2** is a block diagram illustrating an embodiment of the present invention  
15 wherein a system such as that shown in **Fig. 1** is in communication with a remote transcription service.

**Fig. 3** is a block diagram providing a detailed view of a control module of a computer-based system for automating administrative procedures in a medical office in accordance with, for example, the embodiment shown in **Fig. 1**.

20 **Fig. 4** is a block diagram illustrating an embodiment of the present invention wherein a system such as that shown in **Fig. 1** is in communication with a remote transcription service and a plurality of remote personal computers.

**Fig. 5** is a block diagram illustrating an embodiment of the present invention wherein a plurality of client computers configured with computer-based systems for  
25 automating administrative procedures in a medical office in accordance with, for example, the embodiment shown in **Fig. 1**, are in communication with a server computer.

**Fig. 6** is a block diagram illustrating an embodiment of the present invention wherein a plurality of computers configured with computer-based systems for

automating administrative procedures in a medical office in accordance with, for example, the embodiment shown in **Fig. 1**, are in communication with a subscription service center.

**5    Detailed Description**

          The present invention is directed generally to computer-based systems for automating administrative procedures in a medical office. In accordance with particular embodiments of the invention, various administrative procedures that would otherwise require substantial manpower to complete are instead performed by an integrated computer system that performs those administrative procedures in an efficient, cost-effective manner. As a result, substantially less manpower is required to run a medical office, thereby reducing overhead costs. In addition, systems configured in accordance with the present invention enable providers and/or office administrators to become more independent from support staff than is possible in a typical medical office.

          Referring now to **Fig. 1**, in accordance with a first embodiment of the present invention, a office automation system **10** for automating administrative procedures in a medical office includes a control module **12** in communication with an administrator module **14** and a tape management module **16**. In addition, office automation system **10** has access to a database **18**. In the illustrated embodiment, control module **12**, administrator module **14** and tape management module **16** comprise software modules coded in, for example, the C++ programming language. Alternatively, suitable code can be readily generated using a facility such as Visual FoxPro®.

          An example of a system implementing features of the embodiment shown in **Fig. 1**, as well as features of other embodiments described herein, is the MillerMed Utilities™ application available from MillerMed Software, Inc. of Bonsall, California. The MillerMed Utilities™ application is described further in MillerMed

Utilities: The Antidote for an Organization, User Manual for Windows95 (MillerMed Software, Inc. 1998), the disclosure of which is incorporated herein by reference.

Database 18 can reside on the same computer as control module 12, administrator module 14 and tape management module 16, or database 18 can  
5 alternatively reside on a separate computer (e.g., a database server). Where database 18 is remote from the other components of office automation system 10, it may be beneficial for performance reasons to provide a local data store for temporary storage of information read from, or to be written to, database 18. Likewise, in the embodiment shown in Fig. 1, administrator module 14 and tape management module  
10 16 access database 18 through control module 12. Alternatively, administrator module 14 and/or tape management module 16 can be given direct access to database 18.

Office automation system 10 can be implemented on virtually any type of general purpose personal computer (PC) having adequate processing power. One  
15 suitable hardware configuration includes a Pentium®-class or comparable IBM-compatible PC having at least 16 megabytes of RAM (random access memory). To take full advantage of visual and aural information that can be provided to a user of office automation system 10, the PC should have a Super VGA video card and a sound card. Similarly, to take full advantage of certain outsourcing features that can  
20 be provided in accordance with variations of the embodiment shown in Fig. 1, the PC should include a modem and/or a network interface for communicating with other computers. Finally, the PC should be coupled, either directly or indirectly, to at least one printer for report generation. In view of the different types of reports typically required in a medical office, it may be desirable to have both a laser printer or high-  
25 quality ink jet printer (e.g., for printing medical forms) and a dot matrix printer (e.g., for printing triplicate forms).

In the embodiment shown in Fig. 1, control module 12, administrator module 14, and tape management module 16 each reside on the same computer. Persons skilled in the art will recognize, however, that a wide variety of architectural



arrangements are possible to meet the particular needs of any given implementation. For example, a client-server type of arrangement may be desirable for even a small to moderately-sized medical office. In such an implementation, office automation system **10** can be installed on an applications server in communication with a plurality of client computers over a local area network (LAN). Such client computers can be used by a variety of office personnel, such as service providers (e.g., doctors, nurses) and administrative personnel, to access system functions. Similarly, database **18** can reside on a central server computer accessible by a plurality of different office automation systems **10** in remote locations. This type of arrangement is especially useful where a medical practice has a number of branch offices, thus allowing patient and administrative information to be economically shared by all of the different offices.

The embodiment illustrated in **Fig. 1** is preferably implemented to maximize the use of features and capabilities provided by existing off-the-shelf software applications. For example, administrator module **14** can interface with known word processing applications, such as Microsoft Word® or Corel WordPerfect®. Database **18** can be implemented using known database applications, such as Microsoft Excel®, and can be formatted to be compatible with existing medical applications such as Medical Manager® and Physicians Office Computer®. Alternatively, a suite of such applications, such as Microsoft Office®, may be used. Other off-the-shelf applications that can be advantageously integrated with embodiments of the present invention include an event scheduler, a desktop-emulation package (e.g., PC Anywhere®, Carbon Copy®), Internet connectivity and browser software, and utility packages such as Norton Utilities®.

In accordance with another embodiment of the present invention, illustrated in **Fig. 2**, office automation system **10** is electronically linked to a transcription service **30** by a communications link **32**. This embodiment thus facilitates the outsourcing of tape transcription, enabling a service provider to either reallocate staff to other tasks or reduce the size of the staff (thereby reducing overhead). For this

purpose, office automation system **10** includes a communications interface (not shown) for electronically exchanging data with transcription service **30**. The communications interface can be implemented as customized software included in, for example, control module **12** of office automation system **10**. Alternatively, or  
5 in addition, the communications interface can be implemented using an off-the-shelf communications package, including but not limited to an e-mail application. In short, any application that permits files to be exchanged between two computers is suitable. Likewise, communications link **32** can be virtually any type of communications medium, including a dial-up connection over telephone lines, a  
10 satellite connection, a wireless connection, part of a dedicated computer network (e.g., in a LAN (local area network) or WAN (wide area network)). In one particular implementation, communications link **32** comprises an Internet connection.

Office automation system **10** can also be configured to facilitate outsourcing of medical records review in much the same way as outsourcing of tape transcription.  
15 For example, rather than managing the exchange of information with transcription service **30**, office automation system **10** can manage the exchange of information (e.g., medical records, reports) with an off-site record review service (not shown).

In accordance with the embodiment in **Fig. 2**, a given service provider would typically make a number of dictation tapes during the course of a day reflecting, for  
20 example, services provided and/or entries to be made in patient charts. Before the present invention, such tapes presented significant logistical, administrative, and staffing challenges. Various office personnel would be responsible for collecting the dictation tapes, transcribing them or assigning others to transcribe them, distributing the tapes back to the service provider for proofing, and then updating patients' charts  
25 with the transcribed reports. With this embodiment, it is now possible to outsource much of the labor associated with tape transcription, while at the same time improving the associated tracking and processing functions.

To illustrate some of the advantages of the embodiment shown in **Fig. 2**, consider a medical office in which one or more service providers generate a number

of dication tapes in any given day. During the course of the day, the providers give tapes to a designated staff member for logging and outsourcing. Using facilities provided by tape management module **16**, the staff member would input to office automation system **10** information such as the provider's name, the date the tape was  
5 made, the patient(s) to whom the tape relates. This information is used to build a table entry that will eventually be stored in database **18**. In one possible implementation, the staff member would then select an off-site transcriptionist to transcribe the tape. Such selection is preferably done by choosing one of a number of possible transcriptionists presented to the staff member on a display screen. Upon  
10 selection of a transcriptionist, tape management module **16** adds to the aforementioned table entry information identifying the selected transcriptionist. Tape management module **16** can also be configured to automatically print a shipping label for each copy of each report sent to the transcriptionist. Once all identifying information is input, the table entry is stored in database **18**.

15 At the end of the day, tapes ready for transcription are shipped to transcription service **30** using, for example, an overnight courier service. Upon completion of transcription, transcription service **30** transmits a file containing the transcribed report back to office automation system **10** over communications link **32**. Tape management module **16** will update database **18** appropriately to reflect receipt  
20 of the transcription, and the transcribed report can be distributed electronically to the provider or other staff member for review. All such processing can be performed automatically in a background mode, as is known in the art, without requiring any staff interaction.

Embodiments of the present invention can be advantageously used to  
25 departmentalize the administrative functions of a medical office, significantly altering the approach typically taken to medical office administration. Many traditionally necessary interactions between office personnel can be reduced or eliminated entirely by relegating tasks to intelligent software to the maximum extent possible. For example, in accordance with another embodiment of the present invention, illustrated

in **Fig. 3**, office automation system **10** is configured to establish a plurality of "virtual departments," each of which is directed to managing and/or performing different administrative functions. To this end, control module **12** of office automation system **10** coordinates the operations of a collection of "tracker" modules  
5 aimed at minimizing communication and document handling requirements for the office, thereby reducing personnel needs. In this particular embodiment, control module **12** is coupled to a tape tracker **40**, a report tracker **42**, a management tracker **44**, a database tracker **46**, a provider tracker **48**, and an administrator tracker **50**. Examples of the types of functions performed by each tracker module are presented  
10 below.

As is well known in the art of computer programming, the various tracker modules shown in **Fig. 3** can be configured, for example, as substantially independent routines operating under the supervision of control module **12**, and capable of sharing data with one another through, for example, access to database **18**  
15 or a local data store. Alternatively, the tracker modules can be configured in a master-slave relationship under close control by control module **12**, operating only when expressly invoked by control module **12** and returning control to control module **12** upon completion of processing. Persons skilled in the art will recognize that a wide variety of implementations are possible, and the present invention is not  
20 limited to any particular control configuration.

Looking more closely at the individual sub-modules in the particular embodiment shown in **Fig. 3**, tape tracker **40** is configured to provide a comprehensive transcription management system. Tape tracker **40** provides facilities for tracking and/or reporting information relating to tapes (e.g., physical location,  
25 status), transcriptionists (e.g., name and address, number and identity of tapes assigned, current workload), record reviewers (e.g., records assigned, age of assigned records, review status), and documents (e.g., charts, invoices, shipping information), all with minimal user input.

In accordance with a particular implementation of this embodiment, tape tracker **40** includes a facility for automatically assigning tapes to transcriptionists based upon, for example, workload information maintained in database **18**. For example, database **18** may include a transcriptionist table containing records for each  
5 of a plurality of transcriptionists, whether on-site or off-site. For each such transcriptionist, database **18** would include information relating to the identity and address of the transcriptionist, as well as the number of tapes currently assigned to the transcriptionist. Thus, upon being advised of a new tape to be transcribed, tape tracker **40** can identify the transcriptionist with the lightest current workload and  
10 automatically assign the new tape to that transcriptionist. Other information, such as average turnaround time, can be used to further refine the assignment of new tapes.

Report tracker **42** is configured to provide comprehensive report generation and distribution facilities, aimed at reducing the extent of user input required for  
15 these tasks. For example, report tracker **42** uses information in database **18** to automatically insert patient registration data on all reports relating to a given patient, filling in headings, captions, and carbon copy entries on all reports. In accordance with a particular implementation, report tracker **42** uses customizable templates built, for example, using standard macro features provided by most popular word  
20 processing applications (e.g., Microsoft Word®), to reduce the amount of effort required to complete reports. For instance, macros can be used to establish setup forms that enable users to easily customize report headings and establish standard text entries (i.e., boilerplate) for each provider. Similarly, customized letterhead for each branch office of a multi-branch practice can be readily provided, as well as  
25 automatically-inserted signatures for each provider.

Report tracker **42** also provides the ability to streamline report distribution. In a typical office environment, reports must be reviewed and signed by a provider, and often must also be reviewed by an editor for quality control purposes, leading to a situation in which large numbers of physical documents are constantly being

passed around the office. To alleviate the logistical and administrative problems inherent in such an approach, report tracker module **42** can be configured to distribute reports electronically whenever possible. For example, providers can choose to have final versions of reports electronically copied to a personal directory  
5 accessible through office automation system **10** for review, or can select a designated editor to receive signed reports and review them, again by copying the report to the editor's personal directory. Depending upon the nature of a particular implementation, such personal directories may reside on a server computer accessible by the provider and/or editor, or on some other computer capable of communicating  
10 with the computer running office automation system **10** (e.g., an office PC capable of accessing office automation system **10** over a LAN, a home PC capable of exchanging files with office automation system **10** using e-mail).

Report tracker **42** also permits reports to be routed to designated printers on demand (e.g., by copying a file containing the report to a print directory). Indeed,  
15 persons familiar with medical office administration will appreciate that report tracker **42** allows many types of reports to be processed without ever being handled by a provider. For example, office notes, follow-ups, and other simple reports can be automatically sent by report tracker **42** directly to a printer.

Report tracker **42** can also be configured to automatically create a wide  
20 variety of standard forms, such as those associated with workers' compensation claims (e.g., notification forms, QME Summary). Such forms can be generated in batch jobs run during off-hours using information stored in database **18**, and the generated reports can then be copied to appropriate directories for access when the office reopens. In certain cases, forms can be generated without any staff interaction  
25 at all based only on the registration type of each new patient. Again, such forms can be made easily customizable through the use of word processor macros.

In accordance with the embodiment shown in **Fig. 3**, management tracker **44** is configured to provide statistical information relating to office management for use in identifying potential problems and further streamlining operations. For example,

to address the logistical problems typically associated with tracking patient charts, management tracker **44** automatically generates a daily report showing the number of charts assigned to each department in the medical office. This report can include further detailed information, setting forth the identity of each chart and its "age" (i.e.,  
5 how long the chart has been in a given department). By simply consulting this report at the beginning of each day, an office administrator can ascertain a workload status for each department without ever consulting another employee.

Likewise, management tracker **44** can be configured to automatically generate and print a variety of other daily reports, including listings of past, present  
10 and future appointments; charts requiring specific action (e.g., needing a pain drawing); and identification of no-show patients with contact name and phone number. Other possible reports include database maintenance listings identifying, for example, duplicate entries and other errors; and database/file archiving information (e.g., identifying tape backups generated during overnight processing). Management  
15 tracker **44** preferably maintains a table identifying all periodic reports to be generated automatically, and such table can be readily updated by the office administrator. Programming techniques and tools for implementing this type of automatic report generation are well known in the art.

In keeping with the approach of the tracker modules already described,  
20 database tracker **46** is configured to automatically perform a variety of database maintenance activities, most or all of which preferably occur at night when the medical office is closed to avoid competition for precious computer resources. For example, records can be automatically archived after a predetermined period of inactivity (e.g., 30 days), and such archived records can be automatically removed  
25 from any and all directories to which copies had been transferred. Database tracker **46** can also be configured to automatically send e-mail notifications of required actions (e.g., report review) to appropriate personnel based upon information in the database records (e.g., age of record, status). Database tracker **46** is also responsible for constantly tracking the flow of files into and out of the office, automatically

adding new clients to database **18** and automatically finding and inserting data for future patients into appropriate records. Thus, very little data entry is required after the initial input of registration information for a new patient. In addition, database tracker **46** can be configured to maintain updatable tables of information relating to  
5 employees, providers, report types, and other data for use in populating display screens with the latest available information.

Provider tracker **48** is configured to give providers access to a variety of information and facilities aimed at reducing overhead requirements and improving efficiency with respect to administrative tasks. For example, provider tracker **48** can  
10 provide a report of all currently outstanding dictations. Similarly, provider tracker **48** can give the provider access to a report of all outstanding reports, and can prioritize such reports by their respective ages. The provider thus knows how much work needs to be done, as well as what should be done first, without having to contact a staff member. In this embodiment, provider tracker **48** also provides the  
15 ability to transfer files to a diskette or to a remote computer (e.g., a home PC), and automatically distributes reports received from report tracker **42** to the appropriate provider's personal directory. Provider tracker **48** can also be configured to maintain information in database **18** relating to provider workload, thus enabling the office administrator to assess current workloads when determining to whom to assign new  
20 work (e.g., new managed care patients).

Administrator tracker **50** is configured to provide users with access to a variety of information typically required by an office administrator to perform his or her duties. For example, administrator module **52** provides instant access to management reports for each department in the medical office; reports of on-site  
25 and/or off-site data availability; instant access to provider workload, tape status, and chart location information. By maintaining all of the underlying information for such reports in database **18**, administrator tracker **50** enables the office administrator to acquire an array of necessary information without the need for interactions with other office staff members. To further reduce unnecessary employee contacts,



administrator tracker **50** can be configured to maintain an administrator mailbox for receiving e-mail copies of pertinent communications sent by other employees.

Referring now to **Fig. 4**, in accordance with another embodiment of the present invention, office automation system **10** is accessible by remote PCs **60** over  
5 second communications links **62**, thereby enabling providers or other office personnel to access system functions from locations other than the office (e.g., home). Second communications links **62** comprise, for example, dial-up connections, but the present invention is not limited to any particular communication means. Remote PCs **60** may be loaded with special software to support particular functions of office  
10 automation system **10**. Alternatively, remote PCs **60** need only be capable of receiving files from and transmitting files to office automation system **10**.

The embodiments described above can readily be implemented in a Microsoft Windows® environment, providing users with a familiar, user-friendly interface to the many capabilities offered by systems configured in accordance with the present  
15 invention. As is well known in the art, user interfaces can be constructed in menu form, and users can be given access to help screens, audio cues, tutorials, video demonstrations, and so on using standard facilities. Various other time-saving measures can also be built into the user interface. For example, timers can be incorporated into menus where some user selection is required. In the event no  
20 selection is made within a predetermined period of time, such as ten seconds, the program driving the menu can automatically choose the selection that would most commonly be correct in a given situation. In this way, even users with little or no system knowledge are able to benefit from the system.

In accordance with an enhancement of the foregoing embodiments, each user  
25 screen can be configured to display a bitmap image of the user associated with the logonid used to access the system. In other words, when "John Doe" logs on, his picture would appear, for example, in the upper-left hand corner of at least one open window at all times. This feature allows anyone in the area of the user to ensure that the person logged on is in fact the owner of the logonid used. Implementation

of this feature is readily accomplished by storing a picture of each authorized user in respective bitmap files. When a user logs on, the logonid is used to retrieve the associated bitmap file, and the stored picture is displayed on the screen.

**Fig. 5** illustrates an embodiment of the present invention directed to a network environment. In accordance with this embodiment, database **18** resides on a server computer **80** accessible by a plurality of client computers **82**. Each client computer **82** is loaded with an instance of office automation system **10** configured, for example, as in the embodiment of **Fig. 1**. In contrast to the embodiment in **Fig. 1**, however, database **18** does not reside on the same computer as office automation system **10**. Such an arrangement is especially useful where, for example, a practice has a number of different branches at which the same patients may be seen, since the shared use of database **18** eliminates the need to maintain duplicate data at each of the multiple locations. For performance reasons, a copy of selected records from database **18** can be cached in local memories (not shown) of client computers **82**. Updates in progress can be made to the cached record and then copied to database **18** upon completion. As is known in the art, particularly with respect to Internet applications, client computer **82** can be configured to determine whether such a locally cached record has been updated on database **18** and, if so, to automatically replace the cached version with a copy of the updated version.

Referring now to **Fig. 6**, in accordance with another embodiment of the present invention, an office automation system **10** such as that shown in **Fig. 1**, is provided as part of a subscription service, thereby offering a variety of off-site services to providers in remote locations. In accordance with such an arrangement, services can be paid for as they are used. Thus, a solo practitioner with only periodic need for transcription services has comparable access to the features and benefits of office automation system **10** and associated subscription services as does a large medical group that may choose to use the system for overflow dictation or to outsource large volumes of clerical work.

As shown in **Fig. 6**, each of a plurality of subscriber computers **92** are in communication with a subscription service center **90**. In one particular implementation of this embodiment, subscription service center **90** comprises an office location and a server computer (not shown) accessible over the Internet. Each subscriber computer **92** has loaded thereon office automation system **10** configured, for example, like the embodiment of **Fig. 1**. It should be appreciated, however, that each subscriber computer **92** could actually comprise a server maintained by a particular practice group, to which are connected a number of individual computers used by providers, administrators, and other personnel.

In accordance with the embodiment shown in **Fig. 6**, a number of different types of services can be offered on a subscription basis, including but not limited to tape transcription, record review, and chart preparation. In addition, all of the necessary tracking and reporting associated with these services can also be provided.

With respect to transcription, the level of service provided is fully customizable to the needs of any particular subscriber. For example, a provider can simply dictate a tape during an office hours session and send it to subscriber service center **90** (e.g., by overnight delivery service). Subscriber service center **90** would then arrange for transcription (either on-site or using an off-site vendor), print the report and make all copies, mail and/or e-mail the reports and copies back to the subscriber, and update the subscriber's database **18** to document progress. In a particular implementation, subscriber service center **90** periodically updates database **18** with the progress of the requested service, thereby enabling the subscriber to use office automation system **10** to access status information. Once the file containing the transcription is transmitted or otherwise loaded into database **18**, the subscriber can view, print, or edit the transcription using the above-described facilities of office automation system **10**.

Many variations of the foregoing transcription service are possible. For example, where a subscriber has its own transcriptionist, transcription files can be sent by diskette or electronically to subscriber service center **90**, after which

subscriber service center **90** can print and mail reports and update the subscriber's database **18** as just described. If a subscriber wishes to transcribe and print tapes on-site, subscriber service center **90** can receive the transcription files, process them, and transmit files containing the desired reports to office automation system **10** for  
5 automatic printing on the subscriber's printer. Similarly, if a subscriber wishes to use a particular off-site transcriptionist, subscriber service center **90** can receive transcription files from the transcriptionist either electronically or on diskette. As before, such files can then be processed and reports either printed and shipped by subscriber service center **90**, or transmitted to the subscriber computer **92** for  
10 printing. In either case, chart copies are shipped to the subscriber.

Subscriber service center **90** can also provide record review services, performing quality control checks on transcribed dictations and/or on records and reports generated from transcription files. Likewise, subscriber service center **90** can prepare charts. For example, a complete set of history forms, status forms, and fee  
15 tickets for an entire office session of patients, complete with patient information imprinted, can be delivered directly to any subscriber office location.

Subscriber service center **90** can also provide special services to subscribers on demand, such as binding, preparation of slides, and preparation of other presentation materials for lectures, academic conferences, and so on. Facilities built  
20 into office automation system **10** for exchanging files with subscriber service center **90** can readily be used for forwarding the underlying information to subscriber service center **90** along with appropriate instructions. By providing for Internet access and/or direct modem connections, subscriber service center **90** can offer maximum flexibility to providers who are traveling. Any subscriber can then access  
25 subscriber service center **90** from a remote location to gain access to their particular practice's data, retrieve reports, or drop off work. Subscriber service center **90** can also provide data archiving services, freeing up resources on the subscriber's system that might otherwise have to be dedicated to storing outdated records. Access to archived records can then be provided on-demand by subscriber service center **90**.

It should be emphasized that the foregoing subscription services are described by way of example only. Persons in the medical field will recognize that many other services, both administrative and otherwise, can be provided on a subscription basis using arrangements such as that shown in **Fig. 6**.

5           Office automation systems configured in accordance with embodiments of the present invention can be distributed, for example, as a set of instructions residing on a storage medium. Such a storage medium might be a portable storage device, such as a diskette or a CD-ROM; a memory of a computer; a piece of firmware; or any other medium on which it is known to store executable instructions.

10           The foregoing is a detailed description of particular embodiments of the present invention. The invention embraces all alternatives, modifications and variations that fall within the letter and spirit of the claims, as well as all equivalents of the claimed subject matter. Persons skilled in the art will recognize from the foregoing description that many other alternatives, modifications and variations are  
15   also possible.

**What Is Claimed Is:**

1 1. A computer-based system for automating administrative procedures in a  
2 medical office, said system comprising:  
3 a control module;  
4 an administrator module in communication with said control module;  
5 a tape management module in communication with said control module; and  
6 a database accessible by said administrator module and said tape management  
7 module, said database including patient information and provider information.

1 2. The computer-based system of claim 1, wherein said administrator module  
2 includes instructions for providing access to one or more reports selected from a  
3 group consisting of: departmental management reports; data availability reports;  
4 provider workload reports; transcription tape status reports; medical record review  
5 status reports; and chart location reports.

1 3. The computer-based system of claim 1, further comprising a provider module.

1 4. The computer-based system of claim 3, wherein said provider module  
2 includes instructions for performing one or more tasks selected from a group  
3 consisting of: providing access to a list of outstanding reports; prioritizing  
4 outstanding reports based on workload age; transferring files containing reports to  
5 portable storage media; and distributing incoming reports to providers.

1 5. The computer-based system of claim 1, further comprising a management  
2 module.

1 6. The computer-based system of claim 5, wherein said management module  
2 includes instructions for providing access to one or more reports selected from a

3 group consisting of: departmental chart distribution; appointment listings;  
4 identification of charts requiring action; identification of no-show patients; database  
5 maintenance statistics; and system backup statistics.

1 7. The computer-based system of claim 1, further comprising a database  
2 management module.

1 8. The computer-based system of claim 7, wherein said database management  
2 module includes instructions for performing one or more tasks selected from a group  
3 consisting of: archiving aged records; purging outdated records; transmitting  
4 notifications of required actions; managing flow of files into and out of the medical  
5 office; maintaining one or more tables containing employee information, provider  
6 information, and report types; processing data entry input; and populating tables with  
7 data entry input.

1 9. The computer-based system of claim 1, further comprising a report  
2 management module.

1 10. The computer-based system of claim 9, wherein said report management  
2 module includes instructions for performing one or more tasks selected from a group  
3 consisting of: populating report forms with patient information; generating headings  
4 and standard text entries customized by provider; generating letterhead and signature  
5 lines customized by provider; generating boilerplate language required for particular  
6 types of reports; distributing reports; printing reports; and generating and distributing  
7 forms in batch mode.

1 11. The computer-based system of claim 1, wherein said tape management  
2 module includes instructions for performing one or more tasks selected from a group  
3 consisting of: tracking location of transcription tapes; assigning tapes to

4 transcriptionists; tracking transcribed reports; assigning medical records to reviewers;  
5 and tracking documents associated with transcription tapes.

1 12. The computer-based system of claim 1, further comprising a communications  
2 interface, said tape management module being configured to electronically receive  
3 files containing transcribed reports using said communications interface.

1 13. A computer-implemented method for automating administrative procedures  
2 in a medical office, said method comprising the steps of:

3 maintaining an office automation system including a database containing  
4 provider information and patient information;

5 generating reports from the office automation system, automatically  
6 populating fields in the reports with information from the database where  
7 appropriate; and

8 supporting performance of one or more administrative tasks by an off-site  
9 service provider, including managing an electronic information exchange between the  
10 off-site service provider and the office automation system.

1 14. The computer-implemented method of claim 13, wherein said step of  
2 supporting performance of one or more administrative tasks by an off-site service  
3 provider comprises supporting off-site tape transcription.

1 15. The computer-implemented method of claim 14, further comprising the step  
2 of maintaining information relating to a current workload for each of a plurality of  
3 off-site transcriptionists.

1 16. The computer-implemented method of claim 15, further comprising the step  
2 of assigning a transcription tape to an off-site transcriptionist based upon the current  
3 workload information.



1 17. The computer-implemented method of claim 14, further comprising the step  
2 of receiving an electronic transmission of a transcribed report from an off-site  
3 transcriptionist.

1 18. The computer-implemented method of claim 13, wherein said method is  
2 provided as a subscription service.

1 19. A storage medium containing a set of instructions for execution by a  
2 computer, the set of instructions serving to automate administrative tasks in a medical  
3 office, said set of instructions comprising instructions for:

4 maintaining an office automation system including a database containing  
5 provider information and patient information;

6 generating reports from the office automation system, automatically  
7 populating fields in the reports with information from the database where  
8 appropriate; and

9 supporting performance of one or more administrative tasks by an off-site  
10 service provider, including managing an electronic information exchange between the  
11 off-site service provider and the office automation system.

1 20. The storage medium of claim 19, wherein said storage medium comprises a  
2 portable storage device.

1 21. The storage medium of claim 19, wherein said storage medium comprises  
2 a memory of the computer.

1 22. A computer-implemented subscription service for automating administrative  
2 procedures in a medical office, said subscription service comprising:

3           maintaining a database at a subscriber service center, said database   containing  
4 information relating to a plurality of subscribers;

5

6           providing each of said subscribers with a computer-based office automation  
7 system configured to exchange data electronically with said subscriber service center;

8           receiving at said subscriber service center a request for performance of an  
9 office administration task;

10          performing the requested office administration task at said subscriber service  
11 center; and

12          electronically transmitting information relating to performance of the office  
13 administration task back to said computer-based office automation system.

1   23.    The computer-implemented subscription service of claim 22, wherein the  
2 requested office administration task comprises transcription of a dictation tape.

1   24.    The computer-implemented subscription service of claim 23, wherein the  
2 information relating to performance of the office administration task comprises a  
3 computer file containing a transcription of the dictation tape.

1   25.    The computer-implemented subscription service of claim 22, wherein the  
2 information relating to performance of the office administration task comprises status  
3 information.

1   26.    The computer-implemented subscription service of claim 22, further  
2 comprising the step of generating a report from the computer-based office automation  
3 system using the information relating to performance of the office administration  
4 task.

1. The first part of the paper is devoted to the study of the properties of the function  $f(x)$  defined by the equation  $f(x) = \sum_{n=0}^{\infty} a_n x^n$ , where  $a_n$  are the coefficients of the power series. It is shown that the function  $f(x)$  is analytic in the disk  $|x| < 1$  and that it satisfies the functional equation  $f(x) = x f(x^2) + 1$ .

1 29. The computer-implemented subscription service of claim 22, wherein the  
2 requested office administration task comprises forms generation.

**Abstract of the Disclosure**

A computer-based system for automating administrative procedures in a medical office is described. The system includes a control module in communication with an administrator module and a tape management module, as well as a database accessible by the administrator module and the tape management module. The tape  
5 management module can advantageously be configured, for example, to manage outsourcing of tape transcription.

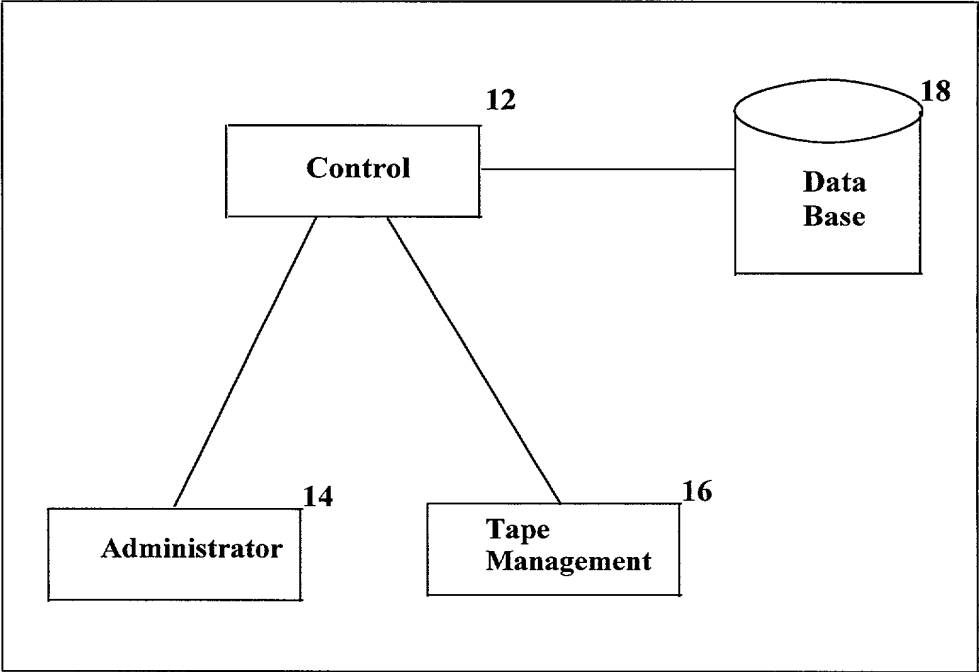
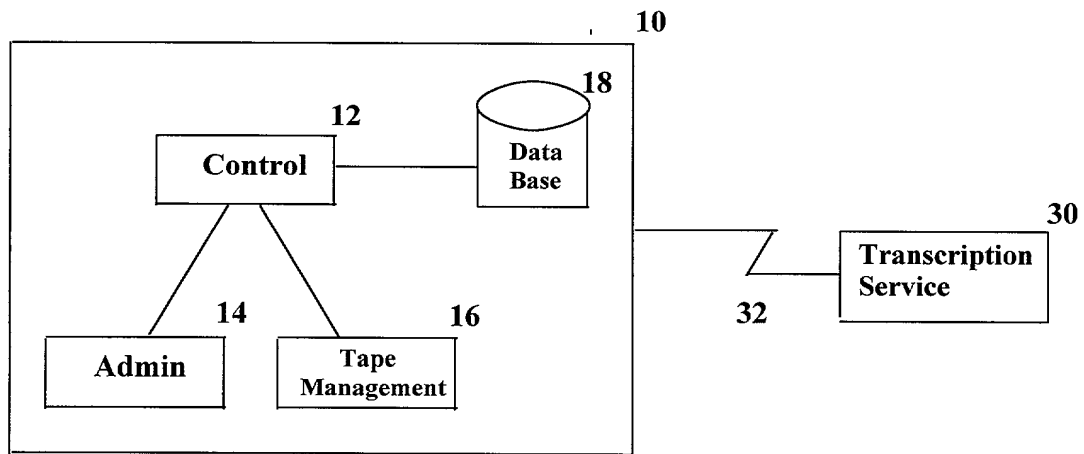


FIG. 1



**FIG. 2**

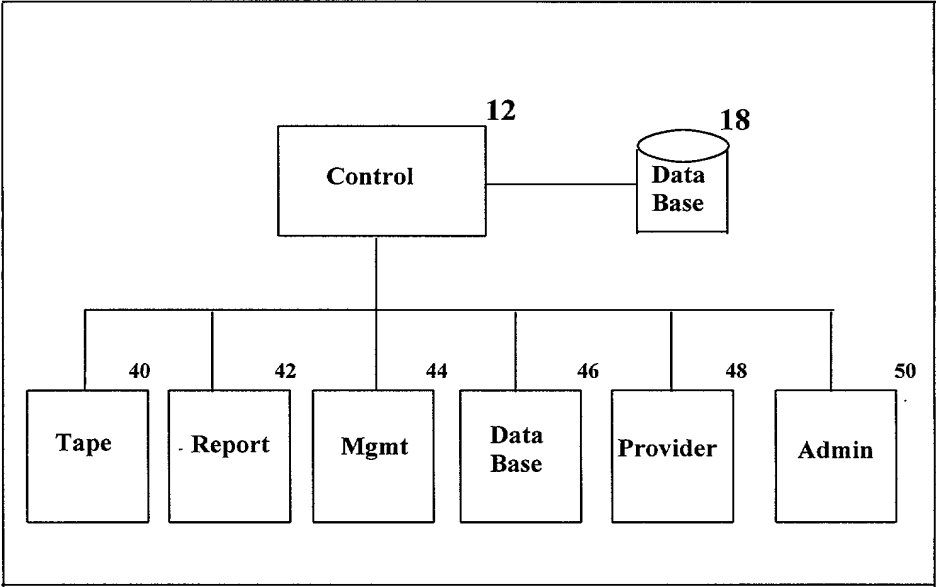


FIG. 3

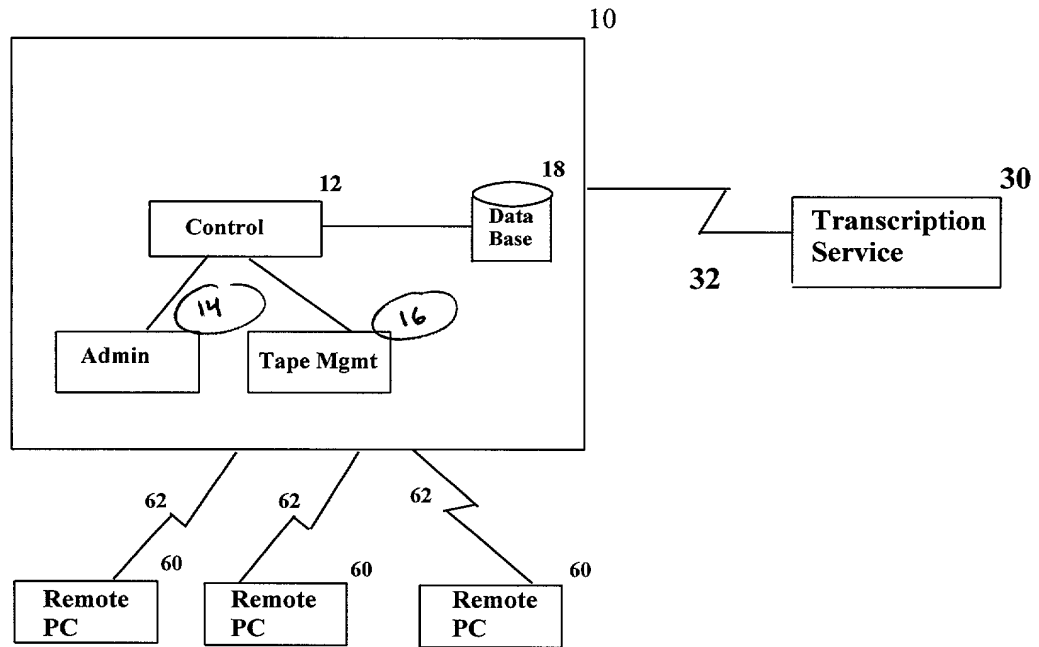


FIG. 4



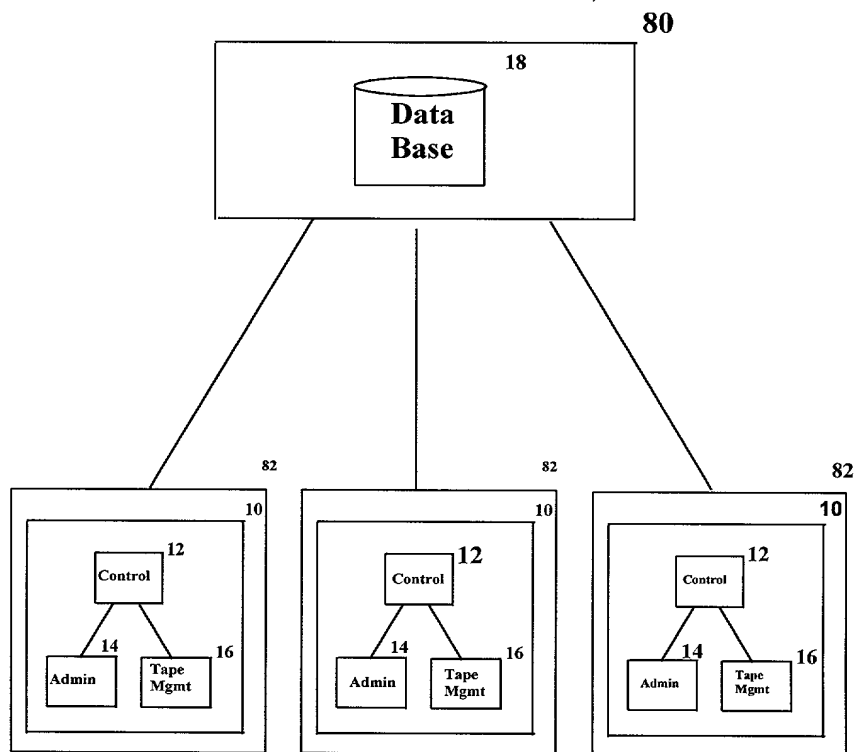
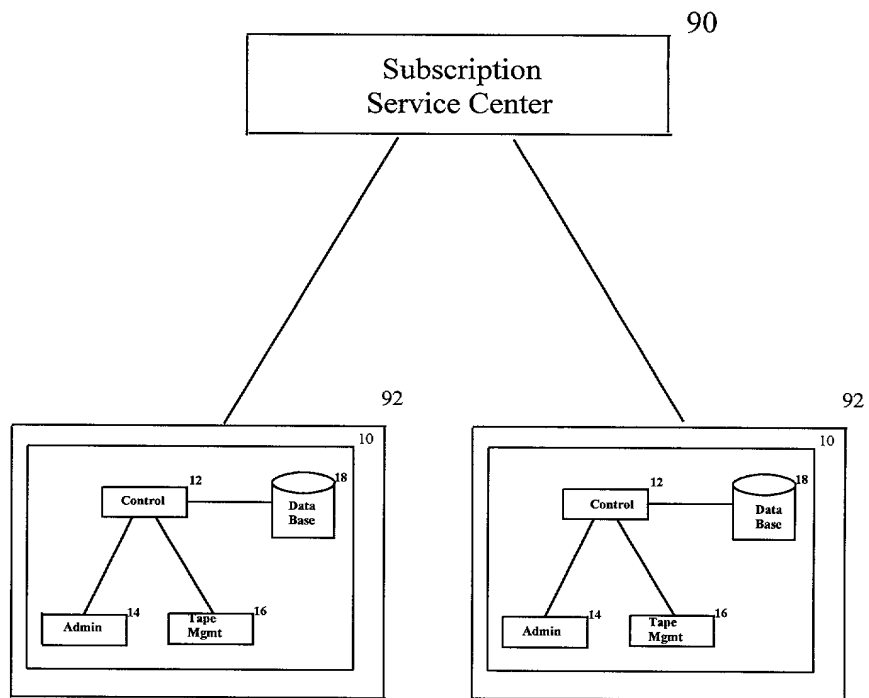


FIG. 5



**FIG. 6**

**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name,

I believe I am an original, first, and sole inventor of the subject matter that is claimed and for which a patent is sought on the invention entitled **COMPUTER-BASED SYSTEM FOR AUTOMATING ADMINISTRATIVE PROCEDURES IN A MEDICAL OFFICE**,

the specification of which

  X   is attached hereto.

           was filed on                     , and assigned Serial No.                     .

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claim(s). I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a), a copy of which is attached.

**PRIOR FOREIGN APPLICATION(S)**

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

APPLICATION NUMBER	COUNTRY	FILING DATE (day, month, year)	PRIORITY CLAIMED	
			Yes	No
None				

**PRIOR UNITED STATES APPLICATION(S)**

I hereby claim the benefit under Title 35, United States Code, §§ 119-120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

APPLICATION NUMBER	FILING DATE (day, month, year)	STATUS (i.e. Patented, Pending, Abandoned)
Provisional Application No. 60/070,884	January 9, 1998	Pending


**POWER OF ATTORNEY:** I hereby appoint:

William K. Wells (Reg. No. 27,042); John C. Altmiller (Reg. No. 25,951); Frank V. Pietrantonio (Reg. No. 32,289); Shawn W. O'Dowd (Reg. No. 34,687); R. Edward Brake (Reg. No. 37,784); and Barry S. Goldsmith (Reg. No. 39,960) of KENYON & KENYON with offices located at 1025 Connecticut Ave., N.W., Washington, D.C. 20036, telephone (202) 429-1776, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

SEND CORRESPONDENCE, AND DIRECT TELEPHONE CALLS TO:

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(202) 429-1776 (phone)  
(202) 429-0796 (facsimile)

I hereby declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful statements may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF FIRST/JOINT INVENTOR	FAMILY NAME Miller	FIRST GIVEN NAME Geoffrey	SECOND GIVEN NAME Marc
RESIDENCE & CITIZENSHIP	CITY Manhattan Beach	STATE OR FOREIGN COUNTRY California	COUNTRY OF CITIZENSHIP United States
POST OFFICE ADDRESS	POST OFFICE ADDRESS 2300 John Street	CITY Manhattan Beach	STATE & ZIP CODE/COUNTRY California 90266
Signature 	Date 1/6/99 (65)		

6522472 9042359

Title 37, Code of Federal Regulations, Section 1.56  
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made or record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.